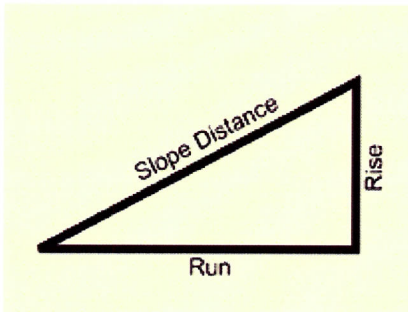


EXHIBIT N

Slope is a term used to indicate the steepness of a straight line. The greater the absolute value of this number, the steeper the line will be. Consider some of the examples of slope you are already familiar with such as the slope of a crater a Mars Rover must navigate, a black diamond ski trail or a ladder leaning against a building.

If you draw a line with two points on it (say, A and B) there are two numbers attached to this pair of points called the rise and the run. The rise is how much higher B is than A in the vertical direction. The run is how far over from A point B is in the horizontal direction. Slope is the value of the quotient of the rise divided by the run.

B



Slope distance = rise over run

Things to remember about slope:

- The slope is the same for any pair of points on the same line.
- Horizontal lines have a rise equal to zero. The slope is calculated by the rise of zero divided by a positive number (run) which equals zero.
- Vertical lines have an undefined slope because the run is always zero and division by zero is undefined.
- Lines with positive slope rise to the right. For positive slopes, the larger the number, the more steeply the line slopes upward.
- Lines with negative slope rise to the left. For negative slopes, the larger the absolute value of the negative number, the more steeply the line slopes downward.

Get Ready

Start the MathTrax application.

Select the "Equations" tab at the top of the MathTrax application

Define an Equation

Type the equation $y=x$ in the "Enter Equation" box.

Press Return

View Graph

Identify origin

Calculate the slope of the line using the slope equation Slope=rise divided by run

Check your answer by reading the text description of the line

Change the Slope

Change your equation to $y=2x$

Calculate the slope of the line using the slope equation Slope=rise divided by run

Check you answer by reading the text description of the line

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+ NASA Official: Robert Shelton
+ Last Update: April 7, 2005
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EXHIBIT O



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q64962

Hideo WATANABE

Appln. No.: 09/880,844

Group Art Unit: 3711

Confirmation No.: 6597

Examiner: Alvin A. HUNTER

Filed: June 15, 2001

For: GOLF BALL

AMENDMENT UNDER 37 C.F.R. § 1.111

Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated October 29, 2002, please amend the above-identified application as follows:

IN THE CLAIMS:

Please cancel claims 6, 11 and 16 without prejudice or disclaimer.

Please enter the following amended claims:

1. (Amended) A golf ball comprising a rubbery elastic core having a center and a radially outer surface, a cover having a plurality of dimples on the surface thereof, and at least one intermediate layer situated between the core and the cover; wherein

B1
Sub
C1

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said intermediate layer is composed of a resin material which is harder than the cover and has a greater hardness than the surface of the elastic core when compared using the same hardness scale, and

said elastic core has a hardness which gradually increases radially outward from the center to the surface thereof, and a difference in JIS-C hardness of at least 18 between the center and the surface.

12. (Amended) A golf ball comprising a rubbery elastic core having a center and a radially outer surface, a cover having a plurality of dimples on the surface thereof, and at least one intermediate layer situated between the core and the cover; wherein

said intermediate layer is composed of a resin material which is harder than the cover, and has a greater hardness than the surface of the elastic core when compared using the same JIS-C hardness scale, and

said elastic core has a hardness at the center and a hardness at the surface thereof which is greater than the hardness at the center thereof, and a difference in JIS-C hardness of at least 18 between the center and the surface.

14. (Amended) The golf ball of claim 12, wherein the difference in JIS-C hardness between the center of the elastic core and the surface thereof is 18 to 30 units.

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15. (Amended) The golf ball of claim 12, wherein the intermediate layer has a Shore D hardness of 50 to 67.

Please add the following new claims:

21. (New) A golf ball comprising a rubbery elastic core having a center and a radially outer surface, a cover having a plurality of dimples on the surface thereof, and at least one intermediate layer situated between the core and the cover; wherein

said intermediate layer is composed of a resin material which is harder than the cover having a Shore D hardness of 45 to 58 and has a greater hardness than the surface of the elastic core when compared using the same hardness scale, and

said elastic core has a hardness at the center and a hardness at the surface thereof which is greater than the hardness at the center thereof, and a difference in JIS-C hardness of at least 18 between the center and the surface.

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REMARKS

Claims 1-5, 7-11, 12-15, 17-21 are all the claims now pending in the application. Claims 6, 11 and 16 have been canceled and claim 21 has been added as a new claim.

I. Claim Objections

Claims 14 and 15 stand objected to for each containing a typographical informality. Applicant has amended the claims and corrected the informalities as suggested by the Examiner. The scope of the claims has not been narrowed. Therefore, Applicant respectfully requests that the objection to claims 14 and 15 be reconsidered and withdrawn.

II. Claim Rejections under 35 U.S.C. § 103

Claims 1, 2, 4-5, 7-8, 10-18 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Moriyama et al. (U.S. Patent No. 6,336,872) in view of Nakamura et al. (U.S. Patent No. 5,803,833) and Farrally et al. (Science and Golf III). To establish a *prima facie* case of obviousness the Examiner must show that the prior art references, when combined, teach or suggest all of the claim limitations. See MPEP § 2143. Applicant respectfully submits that the references cited above by the Examiner fail to teach or suggest all of the claim limitations as set forth in the present application.

A. References do not teach an intermediate layer which is harder than the cover.

Moriyama fails to teach an intermediate layer which is harder than the cover. In fact, Moriyama teaches the opposite relationship, namely, an intermediate layer that is softer than the

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cover. Specifically, Moriyama discloses that "[i]n the golf ball of the present invention, it is required that a JIS-C hardness of the outer layer 3 is higher than the hardness of the intermediate layer 2 by 15 to 40, preferably 19 to 37". Moriyama col. 5:20-23. Nakamura fails to cure this deficiency because the golf ball disclosed in the Nakamura reference is a two-piece solid golf ball, and thus, the golf ball of Nakamura does not have an intermediate layer. Consequently, Nakamura cannot teach an intermediate layer that is harder than the cover. Finally, Farrally discloses that a hard inner layer (or mantle) material should show increased resilience with hardness, such as ionomers or crosslinked polybutadiene, and a soft mantle material should be one that shows increased resilience as the material becomes softer, such as metallocenes like "Exact" or "Engage", polyester elastomers such as "Hytrel", or polyester amides such as "Pebax." However, Farrally merely discloses the relationship between resilience and hardness in the general materials of golf balls, which does not teach or suggest that the intermediate layer is harder than the cover as claimed. The Examiner uses Farrally to teach that it is simply a matter of design choice to have the intermediate layer be harder than the outer cover layer depending on the Applicant's desired results. While Farrally teaches the relationship between resilience and hardness in the general materials of golf balls, it fails to teach when or why one would have found it obvious, in view of the teachings of Moriyama, to modify the hardness of the intermediate layer to be harder than the outer cover layer.

Accordingly, none of the cited references teaches or suggests the claimed relationship of an intermediate layer being harder than the cover.

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B. References do not teach an intermediate layer having a greater hardness than the surface of the core.

Moriyama fails to teach or suggest an intermediate layer having a greater hardness than the surface of the elastic core. Once again, Moriyama teaches the complete opposite relationship. Specifically, Moriyama teaches that "the JIS-C hardness of the intermediate layer is lower than the surface hardness of the center by 0 to 10." Moriyama col. 2:8-10 (emphasis added). Again, Nakamura fails to cure this deficiency because the golf ball disclosed in the Nakamura reference is a two-piece solid golf ball, and thus, the golf ball of Nakamura does not have an intermediate layer. Consequently, Nakamura cannot teach an intermediate layer that is harder than the surface of the core. Finally, as discussed above, Farrally does not teach or suggest any hardness relationship between the intermediate layer and the surface of the core. Accordingly, none of the cited references teaches or suggests the claimed relationship of an intermediate layer being harder than the surface of the core.

C. References do not teach an elastic core having a difference in JIS-C hardness of at least 18 between the core center and the core surface.

Moriyama fails to teach or suggest a difference in JIS-C hardness of at least 18 between the core center and the core surface. Moriyama teaches that the difference in JIS-C hardness between the core center and core surface is less than 10. Moriyama col. 2:6-8; col. 3:23-26. Moriyama explains that the reason why the difference therebetween is less than 10 is that when the hardness difference is larger than 10, "the rebound characteristics are not sufficiently obtained and the shot feel is heavy and poor." Id. col. 3:27-30. On the other hand, the present

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specification describes at least one reason why the elastic core has a difference in JIS-C hardness of at least 18 between the center and the surface:

The difference in hardness within the core gives the ball a low spin when hit with a driver (number 1 wood), enabling it to travel well and thus attain a good total distance. Too small a difference in JIS-C hardness between the relatively soft center and the relatively hard surface of the core allows the ball to take on too much spin when hit with a driver, so that it does not travel well and has a short run after it lands on the ground. This makes it impossible to achieve the desired distance.

Specification page 5, lines 22-33.

Thus, since neither Nakamura nor Farrally cure the deficient teachings of Moriyama, Applicant submits that the references, either alone or in combination, do not disclose and suggest the difference of the claimed hardness and the effects thereof.

D. References fail to teach a core which gradually increases radially outward from the center to the surface thereof.

Applicant submits that the combination of these references fails to teach a core which "gradually increases radially outward from the center to the surface thereof." The Examiner acknowledges on page 3 of the office action that Moriyama fails to teach this feature, but then contends that Nakamura teaches this gradually increasing hardness of the core. However, Nakamura teaches that from 4 mm from the core's surface to 2 mm from the core's surface, the hardness actually decreases. Nakamura col. 2:54-64; Abstract. Therefore, the core of Nakamura fails to gradually increase from the core center to the core surface. Accordingly, the cited references fail to teach or suggest this limitation.

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In view of the above remarks, Applicant submits that the references fail to teach or suggest all of claimed limitations. Therefore, Applicant respectfully requests that the rejection of claims 1, 2, 4-5, 7-8, 10-18 and 20 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

III. Double Patenting

Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 09/881,119 in view of Farrally et al. (Science and Golf III). Applicant submits herewith a terminal disclaimer which disclaims the terminal part of any patent issuing from the present application. However, the submission of the terminal disclaimer is not intended as an admission that the claims of the patent application applied by the Examiner are substantively sufficient to support the Examiner's rejection. Therefore, Applicant respectfully requests that the double patenting rejection be reconsidered and withdrawn.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

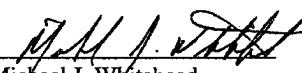
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Michael J. Whitehead
Registration No. 48,071

Date: January 29, 2003

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 6, 11 and 16 are canceled.

The claims are amended as follows:

1. (Amended) A golf ball comprising a rubbery elastic core having a center and a radially outer surface, a cover having a plurality of dimples on the surface thereof, and at least one intermediate layer situated between the core and the cover; wherein

said intermediate layer is composed of a resin material which is harder than the cover and has a greater hardness than the surface of the elastic core when compared using the same hardness scale, and

said elastic core has a hardness which gradually increases radially outward from the center to the surface thereof, and ~~is harder at the surface of the elastic core than said intermediate layer and a difference in JIS-C hardness between the center at the elastic core and the surface thereof is 21 to 30 and undergoes a deformation of 3.5 to 6.0 mm when the load applied thereto is increased from an initial load of 98 n (10 kgf) to a final load of 1,275 N (130 kgf)~~ a difference in JIS-C hardness of at least 18 between the center and the surface.

12. (Amended) A golf ball comprising a rubbery elastic core having a center and a radially outer surface, a cover having a plurality of dimples on the surface thereof, and at least one intermediate layer situated between the core and the cover; wherein

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said intermediate layer is composed of a resin material which is harder than the cover,
and has a greater hardness than the surface of the elastic core when compared using the same
JIS-C hardness scale, and

said elastic core has a hardness at the center and a hardness at the surface thereof which is
greater than the hardness at the center thereof, and a difference in JIS-C hardness of at least 18
between the center and the surface.

14. (Amended) The golf ball of claim 12, wherein the difference in ~~DIS-C~~JIS-C
hardness between the center of the elastic core and the surface thereof is 18 to 30 units.

15. (Amended) The golf ball of claim 12, wherein the ~~Intermediate~~
~~layer~~intermediate layer has a Shore D hardness of 50 to 67.

New claim 21 is added.

EXHIBIT P

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- The polydispersity index is the ratio of the weight average molecular weight to the number average molecular weight. It indicates the distribution of individual molecular weights in a batch of polymers.
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